What Is Claimed Is:

1. A display device which, according to pixel data for each pixel based on an input image signal, displays an image corresponding to the input image signal, comprising:

a display panel, having a front substrate and rear substrate positioned in opposition such that a discharge space is formed between the front substrate and rear substrate, a plurality of row electrode pairs provided on an inner surface of the front substrate such that each row electrode pair defines a display line, and a plurality of column electrodes arranged on an inner surface of the rear substrate such that the plurality of column electrode intersect the plurality of row electrode pairs and such that a unit light emission area including a first discharge cell and a second discharge cell is formed at each intersecting portion of the plurality of row electrode pairs and the plurality of column electrodes, the second discharge cell having a light-absorbing layer and a secondary electron emission material layer;

addressing means for applying scan pulses sequentially to one of the row electrodes in each of the row electrode pairs and applying a pixel data pulse derived from the pixel data to each of the column electrodes, for one display line at a time, with the same timing as the scan pulse, to selectively induce address discharge in the second discharge cells, thereby setting the first discharge cells into either a lit state or into an extinguished state; and

sustain means for repeatedly applying a sustain pulse to

each of the row electrode pairs to induce sustain discharge only in those of the first discharge cells which are in the lit state.

2. The display device according to Claim 1, wherein the light-absorbing layer is formed on or near the front substrate within each of the second discharge cells, and the secondary electron emission material layer is formed on or near the rear substrate within each of the second discharge cells.

3. The display device according to Claim 1, wherein a fluorescent layer is formed only within each of the first discharge cells.

4. The display device according to Claim 1, wherein each of the row electrodes in each row electrode pair comprises a main electrode portion extending in a display line direction, and a plurality of electrode tips protruding from the main electrode portion toward the opposite row electrode in the same row electrode pair such that each electrode tip is opposed to a mating electrode tip, the electrode tips protruding from intersecting portions of the main electrode portion and the column electrodes;

each of the first discharge cells comprises two mating electrode tips belonging to one row electrode pair; and

each of the second discharge cells comprises the main portion of one row electrode in the one row electrode pair and another main portion of a row electrode in a next row electrode pair.

5. The display device according to Claim 1 further comprising reset means for applying a reset pulse to the row

electrodes prior to the address discharge caused by the addressing means, to induce reset discharge across the column electrode and the row electrode in each second discharge cell.

6. The display device according to Claim 1 further comprising reset means for, prior to the address discharge by the addressing means, applying a positive-polarity reset pulse to one row electrode of each of the row electrode pairs and applying a negative-polarity reset pulse to the other row electrode of each of the row electrode pairs, to induce reset discharge across the column electrodes and the row electrodes within the second discharge cells as well as within the first discharge cells.

7. The display device according to Claim 6, wherein the reset means executes the reset discharge induced in the first discharge cells and the second discharge cells of odd-numbered display lines separated by a time interval from the reset discharge induced in the first discharge cells and the second discharge cells of even-numbered display lines.

8. The display device according to Claim 1, wherein the reset pulse has a waveform a level transition of which during a rising interval and falling interval is gradual compared with the sustain pulse.

9. The display device according to Claim 1 further comprising erase means for inducing erase discharge within the first discharge cells and the second discharge cells by applying an erase pulse to the row electrodes after the end of the sustain discharge induced by the sustain means.

10. A display panel driving method for driving a display panel based on pixel data of each pixel of an input image signal, the display panel including a front substrate and rear substrate placed in opposition enclosing a discharge space, a plurality of row electrode pairs provided on an inner surface of the front substrate such that one row electrode pair define one display line, and a plurality of column electrodes arranged on an inner surface of the rear substrate to intersect the row electrode pairs such that a unit light emission area is formed at each intersecting portion of the row electrode pairs and the column electrodes, the unit light emission area having a first discharge cell and a second discharge cell, the second discharge cell having a light-absorbing layer and a secondary electron emission material layer, the method comprising:

an addressing step, in which, while applying sequentially a scan pulse to one row electrode of each of the row electrode pairs, pixel data pulses corresponding to the pixel data are applied to the column electrodes one display line at a time with the same timing as the scan pulse, to selectively induce address discharge in the second discharge cells, thereby setting the first discharge cells into either a lit state or into an extinguished state; and,

a sustain step, in which a sustain pulse is repeatedly applied to each of the row electrode pairs to induce sustain discharge only in those of the first discharge cells which are in the lit state.

11. The display panel driving method according to Claim

10 further comprising a reset step, in which a reset pulse is applied to the row electrodes prior to the addressing step, to induce reset discharge across the column electrodes and the row electrodes within the second discharge cells.

12. The display panel driving method according to Claim 10 further comprising a reset step, in which, prior to the addressing step, a positive-polarity reset pulse is applied to one row electrode in each of the row electrode pairs, and a negative-polarity reset pulse is applied to the other row electrode in the same row electrode pair, to induce reset discharge across the column electrode and the row electrode in each of the second discharge cells, and also within each of the first discharge cells.

13. The display panel driving method according to Claim 12, wherein the reset step comprises an odd-numbered reset step in which the reset discharge is induced in each of the first discharge cells and the second discharge cells in odd-numbered display lines, and an even-numbered reset step in which the reset discharge is induced in each of the first discharge cells and the second discharge cells in even-numbered display lines.

14. The display panel driving method according to Claim 11, wherein the reset pulse has a waveform the level transition of which during the rising interval and falling interval is gradual compared with the sustain pulse.

15. The display panel driving method according to Claim 10 further comprising an erase step in which, after the end of the sustain step, erase discharge is caused in the first

discharge cells and in the second discharge cells by applying erase pulses to the row electrodes.

16. An apparatus for displaying an image corresponding to an input image signal, using pixel data of pixels of the input image signal, the apparatus comprising:

a display panel, having a front substrate and rear substrate positioned in opposition such that a discharge space is formed between the front substrate and rear substrate, a plurality of row electrode pairs provided on an inner surface of the front substrate such that each row electrode pair defines a display line, and a plurality of column electrodes arranged on an inner surface of the rear substrate such that the plurality of column electrode intersect the plurality of row electrode pairs and such that a unit light emission area including a first discharge cell and a second discharge cell is formed at each intersecting portion of the plurality of row electrode pairs and the plurality of column electrodes, the second discharge cell having a light-absorbing layer and a secondary electron emission material layer;

an addressing unit for applying scan pulses sequentially to one of the row electrodes in each of the row electrode pairs and applying a pixel data pulse derived from the pixel data to each of the column electrodes, for one display line at a time, with the same timing as the scan pulse, to selectively induce address discharge in the second discharge cells, thereby setting the first discharge cells into either a lit state or into an extinguished state; and

a sustain unit for repeatedly applying a sustain pulse to each of the row electrode pairs to induce sustain discharge only in those of the first discharge cells which are in the lit state.

17. The apparatus according to Claim 16, wherein the light-absorbing layer is formed on or near the front substrate within each of the second discharge cells, and the secondary electron emission material layer is formed on or near the rear substrate within each of the second discharge cells.

18. The apparatus according to Claim 16, wherein a fluorescent layer is formed only within each of the first discharge cells.

19. The apparatus according to Claim 16, wherein each of the row electrodes in each row electrode pair comprises a main electrode portion extending in a display line direction, and a plurality of electrode tips protruding from the main electrode portion toward the opposite row electrode in the same row electrode pair such that each electrode tip is opposed to a mating electrode tip, the electrode tips protruding from intersecting portions of the main electrode portion and the column electrodes;

each of the first discharge cells comprises two mating electrode tips belonging to one row electrode pair; and

each of the second discharge cells comprises the main portion of one row electrode in the one row electrode pair and another main portion of a row electrode in a next row electrode pair.

20. The apparatus according to Claim 16 further comprising a reset unit for applying a reset pulse to the row electrodes prior to the address discharge caused by the addressing unit, to induce reset discharge across the column electrode and the row electrode in each second discharge cell.

21. The apparatus according to Claim 20 further comprising a reset unit for, prior to the address discharge by the addressing unit, applying a positive-polarity reset pulse to one row electrode of each of the row electrode pairs and applying a negative-polarity reset pulse to the other row electrode of each of the row electrode pairs, to induce reset discharge across the column electrodes and the row electrodes within the second discharge cells as well as within the first discharge cells.

22. The apparatus according to Claim 20, wherein the reset unit executes the reset discharge induced in the first discharge cells and the second discharge cells of odd-numbered display lines separated by a time interval from the reset discharge induced in the first discharge cells and the second discharge cells of even-numbered display lines.

23. The apparatus according to Claim 16, wherein the reset pulse has a waveform a level transition of which during a rising interval and falling interval is gradual compared with the sustain pulse.

24. The apparatus according to Claim 16 further comprising an erasing unit for inducing erase discharge within the first discharge cells and the second discharge cells by

applying an erase pulse to the row electrodes after the end of the sustain discharge induced by the sustain unit.